10. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 248 nm ± 8 nm and an IR focus at λ_{IR} = 760 nm.

11. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 248 nm ± 8 nm and an IR focus at λ_{IR} = 825 nm.

12. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 248 nm ± 8 nm and an IR focus at λ_{IR} = 885 nm.

13. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 248 nm ± 8 nm and an IR focus at λ_{IR} = 905 nm.

14. (Twice Amended) The objective as defined in Claim 8, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 266 nm ± 8 nm and an IR focus at λ_{IR} = 780 nm.

15. (Twice Amended) The objective as defined in Claim 7, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 266 nm ± 8 nm and an IR focus at λ_{IR} = 785 nm.

16. (Twice Amended) The objective as defined in Claim 8, wherein the DUV focus includes a DUV wavelength region λ_{DUV} = 266 nm ± 8 nm and an IR focus at λ_{IR} = 845 nm.

19. (Amended) A DUV-capable microscope, comprising:

an objective comprising a plurality of lens elements, wherein the objective has a DUV focus at a DUV wavelength, λ_{DUV} 235 nm, wherein the DUV focus encompasses a DUV wavelength region $\lambda_{DUV} \pm \Delta\lambda$, where $\Delta\lambda = 8$ nm, wherein the objective has an IR focus for an IR wavelength λ_{IR} 760 nm at the same focal point as the DUV focus at λ_{DUV}, and wherein a penultimate lens element comprises a concave configuration on both sides, wherein an object-side outer radius of the penultimate element is smaller than its image-side outer radius; and

an IR laser autofocus system in optical communication with the objective to provide the IR wavelength λ_{IR} and auto-focussing.

22. (Amended) A microscope objective, comprising:

a converging first lens disposed closest to an object being imaged;

a converging second lens disposed along an optical axis after the first lens;

a first doublet lens disposed along the optical axis after the second lens;

a first triplet lens disposed along the optical axis after the first doublet lens;

a second triplet lens disposed along the optical axis after the first triplet lens;

a converging lens group comprising one or more lenses disposed along the optical axis after the second triplet lens;

a diverging penultimate lens comprising concave outer sides, wherein an object-side outer radius is smaller than an image-side outer radius disposed along the optical axis after the converging lens group; and

a diverging doublet lens disposed after the penultimate lens,

wherein the objective has a focal length of 1.6 mm or less at a DUV wavelength, λ_{DUV} 235 nm, and an IR wavelength, λ_{IR} 760 nm, and wherein a numerical aperture of the objective is at least 0.8.

23. (Amended) The objective as defined in claim 22, wherein the objective has a DUV focus at a DUV wavelength, λ_{DUV} 235 nm, wherein the DUV focus encompasses a DUV wavelength region $\lambda_{DUV} \pm \Delta\lambda$, where $\Delta\lambda = 8$ nm, wherein the

objective has an IR focus for an IR wavelength λ_{IR} 760 nm at the same focal point as the DUV focus at λ_{DUV}.